

DARBY WATER ASSOCIATION (PWS 7410003) SOURCE WATER ASSESSMENT FINAL REPORT

July 31, 2001



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the Darby Water Association*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Darby Water Association drinking water system (PWS 7410003) consists of one source (Darby Spring). The water tested from the spring has background levels of the inorganic contaminants (IOCs) fluoride and nitrate. No volatile organic contaminants (VOCs), synthetic organic contaminants (SOCs), or microbial contaminants have been detected in the spring water. In terms of total susceptibility, the Darby Spring rates low for all types of contaminants (IOCs, VOCs, SOCs, and microbials) thanks to the lack of potential contaminant sources in the watershed and the proper construction of the intake facility.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Darby Water Association, source water protection activities should first focus on correcting deficiencies, if any exist, outlined in the Sanitary Survey (1999). If bacteria are detected in the future, the Darby Water Association should institute a disinfection program, which could be used to treat this problem. Any spills from the road following the Darby Creek canyon should be carefully monitored, as should any future development or resource extraction in the Darby Creek watershed. Most of the designated areas are outside the direct jurisdiction of the Darby Water Association. Partnerships with state and local agencies and industry groups should be established and are critical to success. Since the main source of water comes from a Wyoming watershed, the Darby Water Association should consider adding representatives from Wyoming to any groups formed. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE DARBY WATER ASSOCIATION, DARBY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Darby Water Association public drinking water system consists of one source (Darby Spring). The system serves approximately 60 people with 20 connections, and is located in Wyoming, about 300 feet from Darby Creek (Figure 1).

At the present time, there are no water quality issues facing the Darby Water Association.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used the topographic method developed by the Subsurface Water Subcommittee of the Source Water Assessment Advisory Committee. Topographic maps were used to delineate the location of the watershed divide. The topographic method was used to delineate the extent of the watershed (approximately 14,000 acres) which drains to the intake area of the spring.

The actual data used by DEQ in determining the source water assessment delineation areas are available upon request.

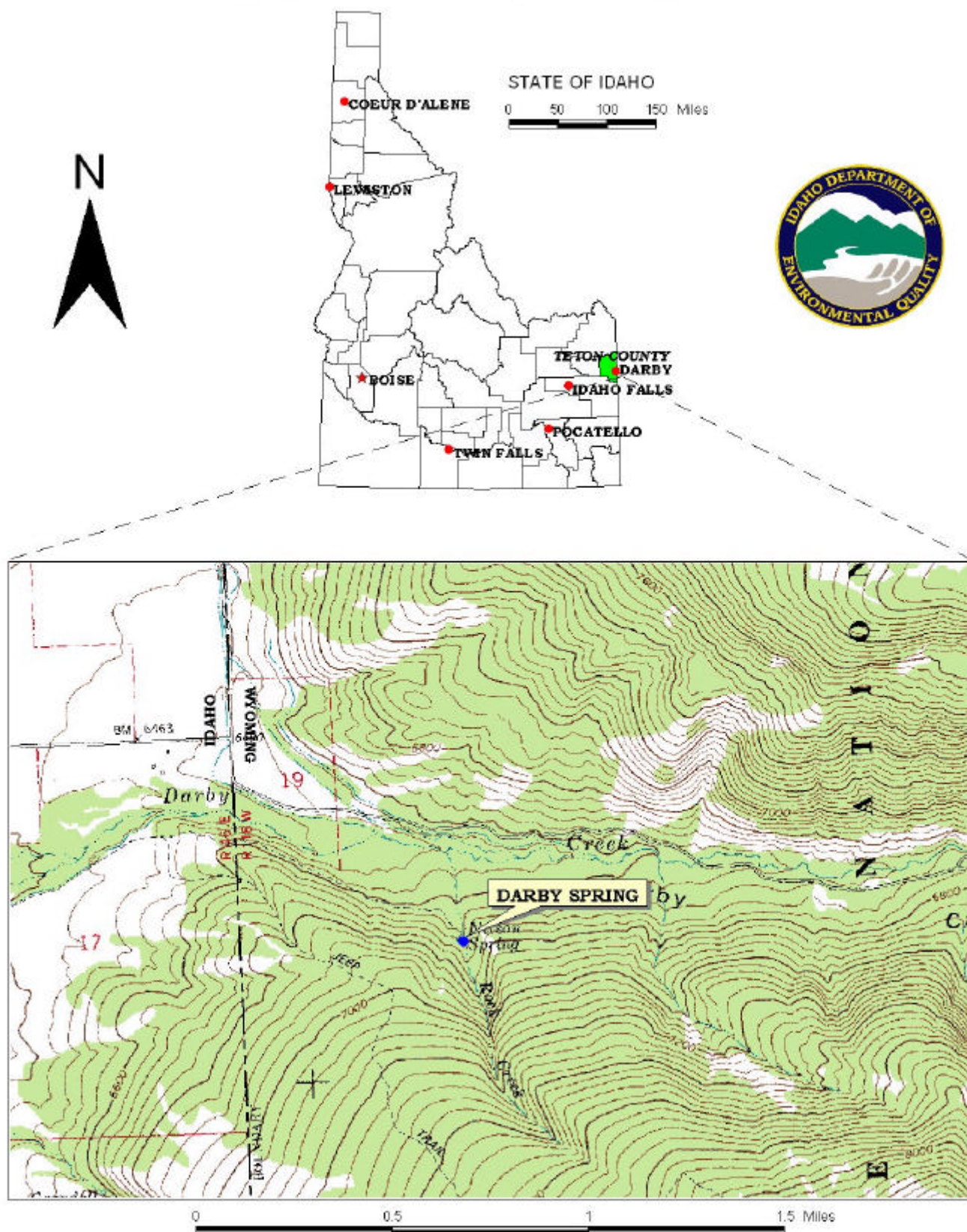
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ, the Darby Water Association, and from available databases.

The dominant land use outside the area of the spring source for the Darby Water Association is undeveloped, mountainous land. Land use within the immediate area of the spring source consists of a road up the canyon and Darby Creek.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

FIGURE 1. Geographic Location of the Darby Water Association

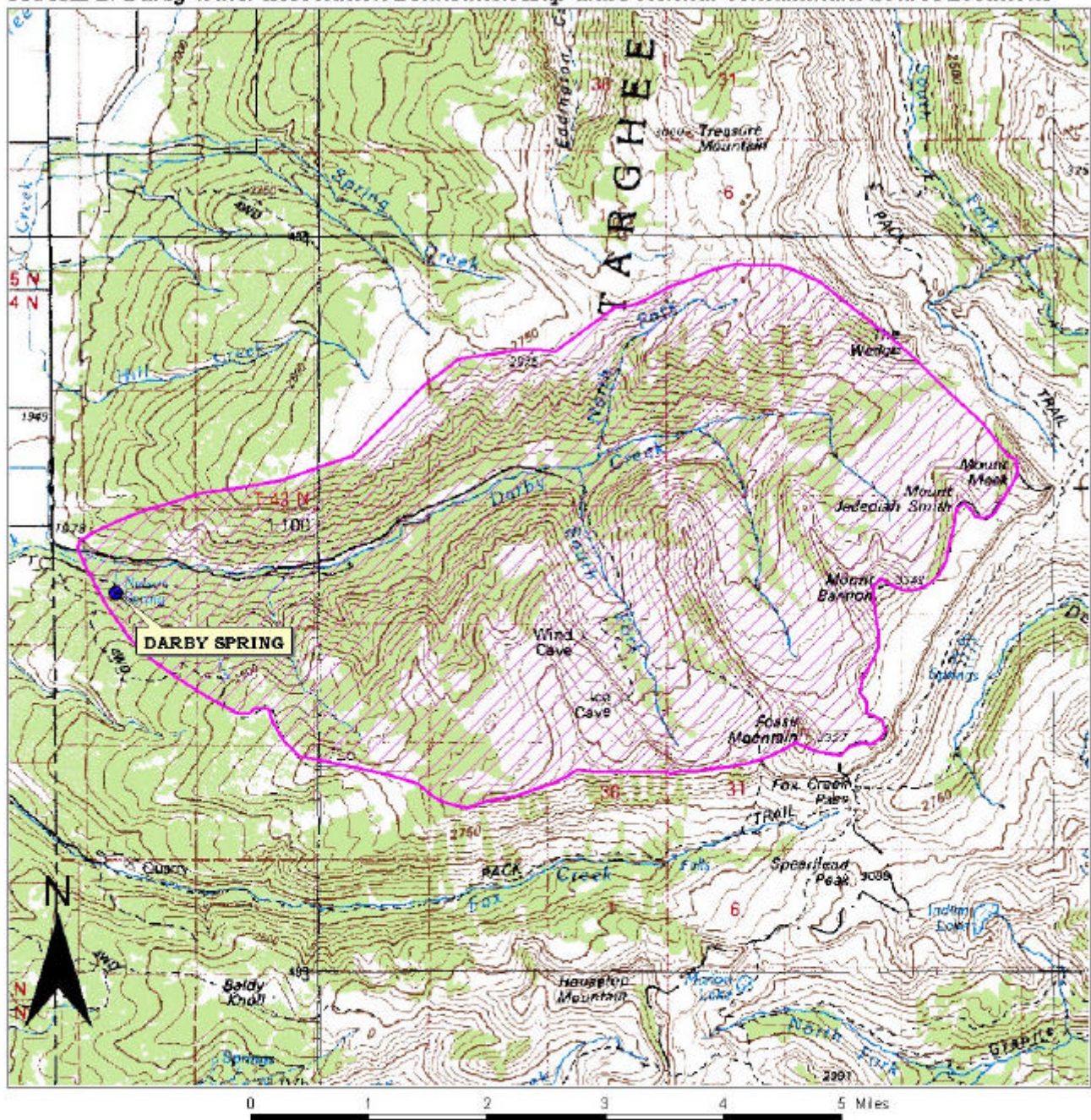


Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted from February to March of 2001. This involved identification of potential contaminant sources within the Darby Water Association Source Water Assessment Area through the use of computer databases and Geographic Information System maps developed by DEQ.

No potential contaminant sources were identified within the delineated area (Figure 2). There is a road that follows the Darby Creek Canyon. If an accidental spill occurred on this transportation corridor, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system.

FIGURE 2. Darby Water Association Delineation Map and Potential Contaminant Source Locations



PWS# 7410003
DARBY SPRING

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: physical integrity of the source, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Spring Construction

The system construction score for the Darby Spring was low, due to the proper construction detailed in the most recent Sanitary Survey (1999). The 1999 Sanitary Survey indicates that the spring source is housed in a permanent structure that is protected from contamination and that there is a fenced 100-foot area surrounding the spring source.

Potential Contaminant Source and Land Use

Darby Spring rated low for IOCs, VOCs, SOC, and microbial contaminants. There are no potential contaminant sources identified. There is a road along the Darby Creek Canyon, which could, potentially, be the source of any type of contamination. The road could also be a source of turbidity in the watershed. No agricultural land exists within 500 feet of the spring intake area.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the source will automatically give a high susceptibility rating to the source, despite the land use of the area, because a pathway for contamination already exists. System construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources near the intake structure and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the Darby Spring rates low for all categories.

Table 1. Summary of the Darby Water Association' Susceptibility Evaluation

Source	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Teton Creek Spring	NA	L	L	L	L	L	L	L	L	L

¹L = Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

NA = not applicable for sources under the direct influence of surface water

Susceptibility Summary

In terms of total susceptibility, Darby Spring rates low for all categories.

Though the IOCs fluoride and nitrate have been detected in the sample spring water, the levels can be considered background as they are well below the Maximum Contaminant Levels. No VOCs, SOCs, or microbial contaminants were detected in of the source.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the Darby Water Association, source water protection activities should first focus on correcting any deficiencies outlined in the Sanitary Survey (1999). Should bacteria be detected in the future, the Darby Water Association would need to institute a disinfection program, that could be used to treat this problem. Any spills from the road following the Darby Creek canyon must be carefully monitored, as should be any future development or resource extraction in the Darby Creek watershed. Most of the designated areas are outside the direct jurisdiction of the Darby Water Association, and therefore partnerships with state and local agencies and industry groups should be established and are critical to success. Since the main source of water comes from a Wyoming watershed, the Darby Water Association should consider adding representatives from Wyoming to any groups formed. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Love, J.D. and Keefer, W.R., *Geology of Sedimentary Rocks in Southern Yellowstone National Park, Wyoming*, USGS Professional Paper 729-D, 1975.

Pampeyan, E.H., Schroeder, M.L., Schell, E.M., and Cressmena, E.R., *Geologic Map of the Driggs Quadrangle, Bonneville and Teton Counties, Idaho and Teton County, Wyoming*, USGS Mineral Investigations Field Studies Map MF-300, 1967.

Schroeder, M.L., *Geologic Map of the Rendezvous Peak Quadrangle, Teton County, Wyoming*, USGS Geologic Quadrangle Map GQ-980, 1972.

Attachment A
Darby Water Association
Susceptibility Analysis
Worksheet

The final scores for the susceptibility analysis were determined using the following formula:

VOC/SOC/IOC/Microbial Final Score = System Construction + Potential Contaminant/Land Use

Final Susceptibility Scoring for Darby Spring:

0 – 7 Low Susceptibility

8 – 15 Moderate Susceptibility

≥ 15 High Susceptibility

Surface Water Susceptibility Report

Public Water System Name :

Public Water System Number

DARBY WATER ASSN
7410003

Well# : DARBY SPRING

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1. System Construction		SCORE				
Intake structure properly constructred	YES	0				
Infiltration gallery or well under the direct influence of Surface Water	YES	0				
Total System Construction Score		0				
2. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score	
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0	
Farm chemical use high	NO	0	0	0		
Significant contaminant sources *	NO					
Sources of class II or III contaminants or microbials	present within the small stream segment of	1	1	1	1	
Agricultural lands within 500 feet	NO	0	0	0	0	
Three or more contaminant sources	NO	0	0	0	0	
Sources of turbidity in the watershed	YES	1	1	1	1	
Total Potential Contaminant Source / Land Use Score		3	3	3	3	
3. Final Susceptibility Source Score		3	3	3	3	
4. Final Source Ranking		Low	Low	Low	Low	

* Special consideration due to significant contaminant sources
The source water has no special susceptibility concerns